

Appl. No. 10/085,061
 Amdt. dated October 4, 2006
 Reply to Office action of April 4, 2005
 Atty. Docket No. AP1107US

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Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. Cancelled without prejudice.
2. (Previously presented) A method as claimed in claim 17, wherein each DMT signal is passed through an IFFT unit which produces a time domain signal $x(n_i)$ and derives said maximal value and said location.
3. Cancelled.
4. (Cancelled)
5. (Currently amended) A method as claimed in claim ~~[[4]]~~ 17, wherein said signature waveform has fewer samples than said DMT signal, and said signature waveform is first aligned with said signal peak prior to subtraction.
6. (Currently amended) A method as claimed in claim 5, wherein said signature waveform is first multiplied by a scaling factor (C) to match said DMT signal.
7. (Currently amended) A method as claimed in claim 6, wherein said scaling factor (C) is determined from said absolute value $|M|$.
8. (Previously presented) ~~A method as claimed in claim 7, A method of effecting peak reduction in a DMT signal, comprising the steps of:~~
 - (i) providing a predetermined signature waveform;
 - (ii) for each frame of samples of the DMT signal, identifying a maximal value of amplitude (M) and the location (I) of said maximal value within said frame,
 - (iii) comparing the maximal value with a threshold value and, if the maximal value is not less than the threshold value,
 - (iv) multiplying the predetermined signature waveform by a scaling factor (C) to obtain a scaled signature waveform, and
 - (v) subtracting said scaled signature waveform from said DMT signal frame so as to reduce said peak to a level substantially equal to said predetermined threshold value,

wherein said signature waveform has fewer samples than said DMT signal, and said signature waveform is first aligned with said signal peak prior to subtraction, said signature waveform is first multiplied by a scaling factor (C) to match said DMT signal, and said scaling factor (C) is determined from said absolute value $|M|$ the scaling factor C is determined in accordance with the equation $C = (|M| - 0xXXXXXX) \times \text{sgn}(M)$ where 0xXXXXXX is said predetermined maximum level.
9. (Currently amended) A method as claimed in claim ~~[[7]]~~ 8, wherein the result of multiplying the scaling factor with said signature waveform is first shifted to match the number of bits per sample in the result with the number of bits representing the time domain signal ~~[[$x(k_i)$]]~~ $x(n_i)$.
10. (Cancelled).
11. (Currently amended) A method of effecting peak reduction in a DMT signal, comprising the steps of creating a predetermined signature waveform, and subtracting said predetermined signature waveform from said DMT signal in the region of a signal peak whenever the DMT signal is above a predetermined maximum level, wherein said signature waveform is generated by passing a predetermined waveform through a waveform modifying circuit on an iterative basis until the waveform change is insignificant between samples or a maximum number of iterations is reached;

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and wherein said waveform modifying circuit comprises an IFFT unit to produce said signature waveform $s(n)$ in the time domain, a waveform restriction unit to produce a modified time domain signature waveform signal $s_1(n)$, ~~[[and]]~~ an FFT unit to produce a frequency domain modified waveform signal $S(k)$ and a spectrum restriction unit to produce a band limited frequency signal $S_1(k)$ which is passed back to said IFFT unit as part of said iterative process.

12. Cancelled.

13. (Currently amended) An arrangement as claimed in claim ~~[[12]]~~ 21, wherein said ~~[[and]]~~ identifying means comprises an IFFT unit for generating a time domain signal from said DMT signal which is applied to a subtractor and identifying said maximum value and said location.

14. Cancelled.

15. (Currently amended) An arrangement for effecting peak reduction in a DMT signal according to claim 21, ~~comprising a first unit for creating a predetermined signature waveform, and a second unit for wherein the subtracting means subtracts said predetermined signature waveform from said DMT signal in the region of a signal peak whenever the DMT signal is above a predetermined maximum level, and wherein said second unit comprises an IFFT unit is provided for generating a time domain signal from said DMT signal which is applied to a subtractor, said IFFT unit [[has]] two additional outputs representing respectively the maximal value and location of said maximum value in said DMT signal, and wherein said additional outputs [[a]] are applied to respective inputs of a threshold calculation unit that generates [[a]] said scaling factor for said signature waveform when said absolute value is above a predetermined value.~~

16. (Currently amended) ~~An arrangement as claimed in claim 15, An arrangement for effecting peak reduction in a DMT signal, comprising a first unit for creating a predetermined signature waveform, and a second unit for subtracting said predetermined signature waveform from said DMT signal in the region of a signal peak whenever the DMT signal is above a predetermined maximum level, wherein said second unit comprises an IFFT unit for generating a time domain signal from said DMT signal which is applied to a subtractor, said IFFT unit has two additional outputs representing respectively the maximal value and location of said maximum value in said DMT signal, and wherein said additional outputs are applied to respective inputs of a threshold calculation unit that generates a scaling factor for said signature waveform when said absolute value is above a predetermined value, and~~

wherein said first unit comprises an IFFT unit for generating a time domain signal from a predetermined input waveform, a time domain waveform restriction unit, an FFT unit for producing a modified frequency domain waveform, and a spectrum limiting unit for said modified frequency domain waveform, an output of said spectrum limiting unit being applied to an input of said IFFT unit to permit generation of said signature waveform by means of an iterative process.

17. (Currently amended) A method of effecting peak reduction in a DMT signal, comprising the steps of:

- (i) providing a predetermined signature waveform;
- (ii) for each frame of samples of the DMT signal, identifying a maximal value of amplitude (M) and the location (I) of said maximal value within said frame,
- (iii) comparing the maximal value with a threshold value and, if the maximal value is not less than the threshold value,
- (iv) multiplying the predetermined signature waveform by a scaling factor (C) to obtain a scaled signature waveform, and
- (v) subtracting said scaled signature waveform from said DMT signal frame so as to reduce said peak to a level substantially equal to said predetermined threshold value.

wherein said signature waveform is generated by passing a predetermined waveform through a waveform modifying circuit on an iterative basis until the waveform change is insignificant between samples or a maximum number of iterations is reached.

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18. (Previously presented) A method according to claim 17, wherein the scaling factor (C) is derived from the maximal value and the threshold value.

19. (Currently amended) ~~A method according to claim 18;~~ A method of effecting peak reduction in a DMT signal, comprising the steps of:

- (i) providing a predetermined signature waveform;
 - (ii) for each frame of samples of the DMT signal, identifying a maximal value of amplitude (M) and the location (I) of said maximal value within said frame,
 - (iii) comparing the maximal value with a threshold value and, if the maximal value is not less than the threshold value,
 - (iv) multiplying the predetermined signature waveform by a scaling factor (C) to obtain a scaled signature waveform, and
 - (v) subtracting said scaled signature waveform from said DMT signal frame so as to reduce said peak to a level substantially equal to said predetermined threshold value,
- wherein the scaling factor (C) is determined from the maximal value and the threshold value in accordance with the equation $C = (|M| - 0xXXXXXX) \times \text{sgn}(M)$ where 0xXXXXXX is said threshold value.

20. (Currently amended) ~~A method according to claim 17;~~ A method of effecting peak reduction in a DMT signal, comprising the steps of:

- (i) providing a predetermined signature waveform;
 - (ii) for each frame of samples of the DMT signal, identifying a maximal value of amplitude (M) and the location (I) of said maximal value within said frame,
 - (iii) comparing the maximal value with a threshold value and, if the maximal value is not less than the threshold value,
 - (iv) multiplying the predetermined signature waveform by a scaling factor (C) to obtain a scaled signature waveform, and
 - (v) subtracting said scaled signature waveform from said DMT signal frame so as to reduce said peak to a level substantially equal to said predetermined threshold value,
- wherein the scaled signature waveform is passed through a bit shifter to match the number of bits per sample thereof with the number of bits in the samples of the time domain DMT signal.

21. (Currently amended) An arrangement for effecting peak reduction in a DMT signal, comprising:

- (i) means for providing a predetermined signature waveform;
 - (ii) means for identifying, for each frame of samples of the DMT signal, a maximal value of amplitude (M) and the location (I) of said maximal value within said frame,
 - (iii) means for comparing the maximal value with a threshold value and, if the maximal value is not less than the threshold value,
 - (iv) means for multiplying the predetermined signature waveform by a scaling factor (C) to obtain a scaled signature waveform, and
 - (v) means for subtracting said scaled signature waveform from said DMT signal frame so as to reduce said peak to a level substantially equal to said predetermined threshold value,
- wherein said predetermined signature waveform generating means generates said signature waveform by passing a predetermined waveform through a waveform modifying circuit on an iterative basis until the waveform change is insignificant between samples or a maximum number of iterations is reached.

22. (New) An arrangement for effecting peak reduction in a DMT signal, comprising means for creating a predetermined signature waveform, and means for subtracting said predetermined signature waveform from said DMT signal in the region of a signal peak whenever the DMT signal is above a predetermined maximum level, wherein said signature waveform creating means generates the signature waveform by passing a predetermined waveform through a waveform modifying circuit on an iterative basis until the waveform change is insignificant between samples

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or a maximum number of iterations is reached, and wherein said waveform modifying circuit comprises an IFFT unit to produce said signature waveform $s(n)$ in the time domain, a waveform restriction unit to produce a modified time domain signature waveform signal $s_1(n)$, an FFT unit to produce a frequency domain modified waveform signal $S(k)$ and a spectrum restriction unit to produce a band limited frequency signal $S_1(k)$ which is passed back to said IFFT unit as part of said iterative process.